

SPECIFICATION

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MOBILE SAFETY COMPLIANCE APPARATUS

Cross Reference to Related Applications

This application claims the benefit, under 35 U.S.C. 119(e), of U.S. provisional applications Serial No. 60/210,267, filed 06/08/2000 and Serial No. 60/268,597, filed 02/13/2001, pending.

Background of Invention

[0001] 1.Field of the Invention.

[0002] The present invention relates, generally, to safety equipment, and, more particularly to a portable health and safety compliance apparatus having compartments for storage, waste disposal, and a water system for cleaning and washing. The apparatus permits an individual or company to easily comply with health and safety regulations.

[0003] 2.Background Information.

[0004] The introduction of OSHA and other health and safety regulations have imposed a substantial cost on industry to provide health equipment and supplies at the job site. Existing ways of providing health and safety devices have a number of disadvantages. Compliance is often achieved by purchasing required health and safety equipment piece by piece and assembling and aggregating it all at the job site, often in an unorganized way. There are often problems of finding suitable storage containers and a method organizing the equipment and supplies. Proper storage for sterile medical supplies may not be available. Medical and safety equipment must be organized so it can be accessed quickly; equipment stored randomly defeats this objective. Furthermore, moving the equipment and supplies from one job site to another can

disrupt any effort to organize them and is expensive and inconvenient.

[0005] Health equipment and safety equipment are distinct, yet have complementary functions. Health equipment includes hand and eye wash facilities and a well-stocked first-aid kit for treating injuries. Safety equipment usually includes warning lights and bells, sensors, and equipment such as safety glasses and respirators. Also, it is often desired to display printed safety information such as posters, warnings, directives, procedures and the like at a job site where there is often no suitable surface for such display.

[0006] Safety compliance is very expensive, and providing an integrated, compact, portable and aesthetically pleasing apparatus can substantially reduce costs of compliance. It is desirable to have a single portable apparatus that houses all the required safety and health equipment for a particular job in an organized fashion and protects it from adverse weather.

[0007] There are several portable carts designed for various specific purposes. U.S. patent 2,905,480 to Giovannelli discloses a carry-all cart with a drinking water supply and multiple compartments closed by doors, but this apparatus is rather small with an opening top and does not appear to have any provisions for making it weather tight.

[0008] U.S. patent 5,333,885 to Pullman discloses a portable part designed for fishermen with various apparatus to hold fishing equipment.

[0009] U.S. patent 5,797,612 to Buccioni discloses a portable cart with internal baskets on roller glides, and is specifically designed to accommodate hockey equipment to.

[0010] U.S. patent 5,224,220 to Cortez discloses a portable recycling and work center which has receptacles for disposing of items and has apparatus for holding cleaning equipment and a first-aid kit and fire extinguisher.

[0011] U.S. patent 4,790,610 to Welch et al. discloses a portable medical emergency crash cart which has a plurality of compartments with a transparent cover to allow visual identification of materials in the compartments. It also has a portion for disposables and a portion for attaching an oxygen tank.

[0012] While each of these carts are well-suited for their intended purposes, none of

them are particularly well suited for supplying health and safety equipment to a job site. None is designed to be stored outdoors, and none include a sink for washing or any provisions to collect any waste water.

[0013] U.S. patent Des. 391,343 discloses a portable sink and foot pump integral with apparatus for dispensing soap, paper towels, and a disposal area.

[0014] Storage apparatuses designed for outdoor use are not designed to be readily moved and typically do not have wheels.

[0015] The present invention provides a mobile safety compliance apparatus which overcomes the limitations and shortcomings of the prior art.

Summary of Invention

[0016] The present invention provides a mobile safety compliance apparatus comprising a shell having a base, a top, a plurality of substantially vertical walls between the base and the top, and a plurality of substantially horizontal walls connected to the vertical walls to form a plurality of open compartments. A plurality of doors are hingedly attached to the shell, and the doors are arranged to close the compartments when closed and to provide access to the compartments when open. The apparatus has a water supply system including at least one water supply tank removably stored in one of the compartments, and apparatus connected to the water supply tank to dispense water contained therein. The apparatus also has a waste water collection system including at least one waste water collection tank stored in one of the compartments, and tubing connected to the water collection tank to convey waste water to it. The shell is preferably made of plastic material with the vertical and horizontal walls integrally molded as a single apparatus. The compartments may have removable dividers, and doors may have window portions.

[0017] Wheels are provided at the base of the apparatus to facilitate its movement, and flanges are also provided at the base to allow the apparatus to be secured to the ground. The apparatus has a lifting provision at its top which is connected to a rod extending through the apparatus to a support member below the base so that the lifting load is transmitted to the base of the apparatus rather than through the top.

- [0018] A portion of the outer surface of the apparatus can be used to display printed information and is covered with a removable transparent sheet. A stowable table and a stowable seat are also hingedly attached to the outside of the shell.
- [0019] Doors may be removable for other uses. In one embodiment a plurality of handles are attached to a door and positioned such that the door can be used as a stretcher to carry a sick or injured person. In another embodiment the door includes a movable portion that is deployed to increase its area, and a plurality of removable support legs are attached to the door when it is removed, thereby supporting the door in a generally horizontal position for use as a freestanding table.
- [0020] The apparatus has an eyewash attached to the shell. The eyewash receives water from the water supply system, dispenses the water, and collects the water dispensed and directs it to the waste water collection system. The eyewash is pivotable between a stowed position against the shell and a deployed position extending outward from shell. The eyewash is preferably positioned lower than its source of water so that water flows to the eyewash by force of gravity.
- [0021] The apparatus has a recessed area that includes a sink that collects waste water and directs it to the waste water collection system. A soap dispenser, a cup dispenser, an eyeglass cleaner dispenser, and a tissue dispenser are preferably all attached to the shell in the recessed area. The apparatus preferably has a water heating device for warming water for hand washing. Drinking water is also provided, and optionally may be chilled.
- [0022] The apparatus includes an electrical system with a power supply and a backup storage battery which powers lights, the water heating and refrigeration systems if they are provided, and electronic communications equipment that may be mounted on the shell.
- [0023] The apparatus provides the ability to comply with requirements imposed by both health and safety standards for various industrial applications, as well as provides ready access to all the equipment and supplies needed for specific tasks, in a compact mobile unit.
- [0024] The features, benefits and objects of this invention will become clear to those

skilled in the art by reference to the following description, claims and drawings.

Brief Description of Drawings

- [0025] Figure 1 is a perspective view of a preferred embodiment of a mobile safety compliance apparatus of the present invention.
- [0026] Figure 2 is a perspective view of the mobile safety compliance apparatus of Figure 1 from the direction opposite that of Figure 1.
- [0027] Figure 3 is the view of Figure 2 shown with doors open to reveal internal compartments and also illustrating some of the items that can be stored in the compartments.
- [0028] Figure 4 is a cross sectional view of the portion of the apparatus taken along line 4-4 in Figure 3.
- [0029] Figure 5 is a perspective view of a suspension rod and structural channel that attach to the apparatus to facilitate lifting the apparatus from above.
- [0030] Figure 6 is a cross sectional view taken along line 6-6 in Figure 2.
- [0031] Figure 7 is a detail view of a portion of Figure 2 with a door hinge shown exploded and illustrating how the apparatus can be fastened to the ground.
- [0032] Figure 8 is a detail view of a portion of Figure 2 illustrating a seat.
- [0033] Figure 9 is a perspective view of a door from the apparatus of Figure 2 that can be used as a stretcher.
- [0034] Figure 10 is a perspective view of a door from the apparatus of Figure 2 that can be used as a table.
- [0035] Figure 11 is the view of Figure 10 showing the insert in the door unfolded and legs attached to make the table.
- [0036] Figure 12 is a cross sectional view taken along line 12-12 of Figure 11.
- [0037] Figure 13 is a detail view of a portion of the apparatus shown in Figure 2 illustrating a stowable eye wash attached to the apparatus and its associated water

system.

- [0038] Figure 14 is a perspective view of the apparatus of Figure 1 from another angle between that of Figures 1 and 2 showing the sink area.
- [0039] Figure 15 is a detail view of a portion of Figure 14 illustrating hand washing and drinking water systems.
- [0040] Figure 16 is a perspective view of a sink installed in the apparatus.
- [0041] Figure 17 is a side view of the sink of Figure 16.
- [0042] Figure 18 is a perspective view of a water heater device installed in the apparatus showing the inlet and outlet water lines and a bypass valve.

Detailed Description

- [0043] Referring to *Figures 1-3*, an example of the preferred embodiment of the present invention is illustrated and generally indicated by the reference numeral 20. The present invention is directed to a mobile safety compliance apparatus 20 containing equipment and supplies necessary to comply with health and safety standards in one portable unit. The apparatus has a self-contained water supply system and a waste water collection system. In the preferred embodiment, the apparatus includes an eye wash station, a sink with tepid water for hand washing, potable drinking water and lighting. The apparatus 20 is an elongated cubic structure approximately six feet high by approximately two feet wide and two feet deep with an assortment of compartments and structures that contain and support the many elements installed in the apparatus 20. The equipment and items contained in the apparatus 20 can be selected to meet specific requirements of the user.
- [0044] The core of the apparatus 20 is a shell 22 having four sides 24, 26, 28 and 30, a generally closed top 32, and base 34. Shell 22 is preferably made of plastic and is preferably molded in one piece with wall thicknesses of preferably approximately 1/4 inch, preferably using a rotomolding process. Referring also to *Figure 4*, shell 22 has a plurality of internal substantially vertical walls 36a-d connected to a plurality of substantially horizontal walls 38a-g. The combination of vertical walls 36 and horizontal walls 38 make a plurality of open compartments 94 used to hold various

things as will be described below. Walls 36 and 38 can be configured in any suitable arrangement to create the desired configuration of compartments. The top and base, being generally closed structures, along with integrally molded walls 36 and 38 provide structural strength and stiffness to shell 22.

[0045] Referring also to *Figures 5 and 6*, a lifting provision is preferably supplied at the top 32 of shell 22. The lifting provision preferably includes a suspension rod 40 extending through the top 32 and the base 34, a support member 46 disposed underneath the base 34 and engaging the rod 40, and an eyelet 42 engaging the rod at the top such that when the apparatus 20 is lifted by eyelet 42, weight of the apparatus 20 is supported by support member 46. Preferably internal vertical walls 36 allow for passage of suspension rod 40 between them and through the top 32 and base 34 of shell 22. Suspension rod 40 is preferably a threaded rod, and eyelet 42 engages its top end that extends beyond top 32 to provide the lifting provision for the apparatus. The lower end 44 of suspension rod 40 passes through base 34 and support member 46 which is secured against base 34 by tightening nut 48 on end 44 of suspension rod 40. Support member 46 is preferably a portion of metal structural channel, preferably aluminum, arranged so that the legs of the channel contact base 34. Eyelet 42 can be engaged by a hook on a cable attached to a crane, helicopter or other suspension device to allow apparatus 20 to be safely lifted and transported to the desired location. The lifting load is transmitted through suspension rod 40 to the base 34 so that the weight of apparatus 20 is supported by support member 46 which is approximately aligned with a substantial number of vertical walls 36. By using spreader bars on the lifting device, a plurality of apparatuses 20 can be ganged together and lifted simultaneously.

[0046] Apparatus 20 has a pair of wheels 52 located at side 28 along base 34 and a handle 54 located along side 28 at top 32. To move apparatus 20, it may be tipped on wheels 52 by pulling handle 54, and the apparatus rolled such as like a wheelbarrow. At least one, and preferably a pair, of ground-engaging flanges 56 are located at side 24 along base 34. These flanges 56 act as anchor points and have apertures 58 which allow for securing flanges 56 to the ground or floor with devices such as bolts, stakes, or other tie-downs as illustrated in *Figure 7*. The bottom of flanges 56 and bottom of wheels 52 generally contact a planar ground surface when the apparatus is standing

vertically upright. To move apparatus 20 along a flat surface without tipping it, casters 50 may be disposed below base 34, and are preferably mounted on support member 46 in a spaced arrangement. Base 34 has a curved lower surface 60 which allows for positioning of support member 46 along lower surface 60 such that the casters are approximately centered under the shell and the bottom of casters 50 will contact the ground surface and slightly raise flanges 52 off the ground. Wheels 52 and flanges 56 are slightly elevated above the ground when the apparatus 20 is balanced on the casters 50, thereby facilitating moving the apparatus along the ground on the casters, the wheels 52 and flanges 56 occasionally bumping the ground as apparatus 20 is moved.

[0047] Referring again to *Figure 1*, side 24 is substantially flat and has an upper portion 62 the outer surface of which is preferably used to display printed material 64. A transparent sheet 66 is removably installed over portion 62 and provides a weather resistant cover for material 64 displayed on portion 62.

[0048] ^{sub} The lower portion of side 24 may also be used to display information, but preferably it has a substantially flat table portion 68 pivotally attached to side 24 at hinge 70. Table portion 68 has a stowed position where it is secured against side 24. It also has a deployed position, illustrated by the phantom lines, whereat it is pivoted up away from side 24 and support members 72 are installed preferably between it and the bottom of side 24 so that table portion 68 is supported in a substantially horizontal position. Support members 72 may be separate elements, as illustrated, that are stowed under table portion 68, or in one of the internal compartments in apparatus 20. Alternatively, support members 72 may be one or more triangular shaped elements hingedly attached to side 24, similar to that shown in *Figure 8*.

[0049] Referring to *Figures 2 and 8*, side 28 has a seat 90 hingedly attached to it similar to table portion 68, but mounted lower on shell 22 to be at the proper height for sitting. Seat 90 may be approximately the full width of side 28 as illustrated in *Figure 2*, or it may be only a partial width, such as illustrated in *Figures 3 and 8*. Seat 90 has a stowed position as shown in *Figure 1*, and a deployed position as shown in *Figure 8*. In the deployed position, seat 90 is supported by support member 92, which preferably is a triangular shaped element hingedly attached to the side 28. For the full

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width seat 90, two support elements 92 would preferably be used.

[0050] Referring to *Figures 1-3 and 7*, apparatus 20 has a plurality of full-length doors 68, 70, and 72 hingedly attached at corners of shell 22. The doors are arranged to close the compartments 94 when closed, and to provide access to a plurality of compartments when open. Shell 22 has lugs 74 at corners which cooperate with lugs 76 on the doors to form the hinges. Hinge pins 80 pass through apertures in lugs 74 and 76 to attach the doors to the shell 22. Hinge pins 80 are readily removable so that the doors can quickly and easily be removed.

[0051] Doors 68, 70 and 72 can have additional functions besides that of a door. Door 68 as illustrated has a window portion 76 which allows a user to quickly ascertain what is behind a door. This is very useful when apparatus 20 is to be used in a medical trauma situation and a variety of medical supplies are stored in compartments behind the door.

[0052] Referring to *Figures 2, 3, and 9-12*, when doors 70 and 72 are removed from shell 22 they have alternative uses, such as a stretcher and a table respectively. The doors are made of molded plastic and have a recessed portion which receives an insert, such as plywood, that provides additional function. Door 70, as shown in *Figure 9*, functions as a stretcher. A stiffening insert 78, such as plywood, is fastened to door 70, and has handles 81, such as the four rope handles illustrated, to facilitate the door 70 being picked up by personnel to transport a sick or injured person. Door 70 with insert 78 is sufficiently stiff and strong to support a person on it. Alternatively, door 70 maybe formed so that it has sufficient stiffness as molded without needing a stiffening insert.

[0053] Door 72, as illustrated has provisions for connecting support legs to it so that it may be used as a freestanding table when it is removed from shell 22. Door 72 preferably has a movable portion that that is deployed, preferably by pivoting or extending, to increase its area. As shown in *Figures 10-12*, door 72 preferably has a plywood insert 82 having a first portion 82a fastened to door 72 and a second portion 82b hingedly connected to first portion 82a, such as by individual hinges 84, or by a single long hinge. Slats 86 are stored in a cavity between first portion 82a and door 72. When portion 82b is opened, slats 86 are pulled partially out to support it as



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approximately two feet higher than eyewash 112, gravity supplies sufficient water flow to operate eyewash 112. Flexible supply tubing 116 passes inside of eyewash 112 and connects to nozzle portion 120 which has apertures in depressed portions 122 through which water flows to wash eyes of a user. Eyewash 112 has a basin 124 which collects the used water and directs it through flexible drain tubing 126 to the eyewash wastewater tank 100. Eyewash water supply tank 108 may have a heating element 165, preferably electrical, installed in it to warm the water making it more comfortable to use.

[0057] Referring to *Figures 14 and 15*, the approximate upper half corner of shell 22 at the juncture of sides 26 and 28 has a first recessed area to accommodate a sink 128. The recessed area is bounded by wall 130 that extends inward from side 26, wall 132 that extends inward from side 28 to form a corner near the center of shell 22, ledge 134 at the bottom and ceiling 136 at the top. Walls 130 and 132 provide a mounting service for items such as soap dispenser 138, cup dispenser 140 and lens cleaner dispenser 142. Other items, such as napkin or tissue dispenser 144, may be mounted in ceiling 136. A drinking water spigot 146 is also preferably mounted on wall 130. A drinking water supply tank 148 is stored in upper compartment 94h adjacent wall 130 and higher than spigot 146 to allow for easy gravity feed of drinking water to spigot 146 through flexible drinking water tubing 150. A quick connect fitting 152 is preferably installed on tubing 150 near drinking water supply tank 148 to allow the supply tank 148 to be easily disconnected and removed for re-filling and also prevents water from leaking out of tubing 150 when the tank is disconnected. An optional refrigeration unit 154 may be included and connected to tubing 150 to chill drinking water before it exits spigot 146.

[0058] *Sub B d* Referring to *Figure 15*, sink 128 is mounted in ledge 134 along with wash water dispensing tube 156. Sink 128 is preferably a separate basin, as illustrated in *Figures 16 and 17*, installed in a cut-out in ledge 134. A lip 158 on sink 128 rests on ledge 134 and is secured to it by fasteners. Alternatively sink 128 may be integrally molded with ledge 134. Flexible drain tubing 160 is connected between a drain port 162 on sink 128 and wastewater storage tank 98.

[0059] Water for hand washing is supplied to water dispensing tube 156 from water

supply tank 96. Since water supply tank 96 is below dispensing tube 156, a pump, such as foot pump 162 mounted in base 34, is used to pump the water through flexible water supply tubing 164. Water for hand washing is preferably warmed preferably by an electrical heating element 165 installed in water supply tank 96. Alternatively, a water heating device 166 may be connected to water supply tubing 164 between pump 162 and dispensing tube 156 so that water exiting tube 156 is warm. The heating device 166 receives water from the water supply system, heats it to produce heated water at a first temperature, then mixes it with unheated water from the water supply system to provide heated water at a second temperature lower than the first temperature. Referring also to *Figure 18*, water heating device 166 may be a conventional under-sink water heater with an adjustable bypass valve 168, such as a needle valve, connected between cold water input line 170 and hot water output line 172. The amount of cold water flowing through bypass valve 168 instead of through water heater 166 is adjusted with valve 168 to set the temperature of water flowing through output line 172 to dispensing tube 156. The in-tank heat element is a simple way to heat water, but it requires heating the entire tank of water. Water heating device 166 heats a much smaller portion of water and may be more energy-efficient, though more complicated.

[0060] The shell 22 has a second recessed portion 174 at the lower portion of side 26 below sink 128 which preferably holds a waste collection container 176. A removable panel 178 partially covers recessed 174 to retain the waste collection container 176.

[0061] Referring again to *Figure 14*, additional compartments 94i and 94j are located in side 26 left of sink 128 and are closed, along with compartment 94h, by door 68. Compartment 94h, which holds the drinking water supply tank 148, may have another closure panel 180 over it so that water supply tank 148 does not inadvertently fall out of compartment 94h when door 68 is opened. Closure panel 180 may be transparent and may be hingedly attached to side 26. Lower compartment 94j. may be further divided into sub compartments if desired, or it may be left large to hold large heavy objects, such as oxygen bottle 182 or fire extinguishers.

[0062] An electrical storage battery 184 is preferably stored at the bottom of compartment 94j and supplies D.C. backup power for the apparatus 20. A power

supply and converter 186 is installed in one of the compartments, such as 94i, and has electrical wires 188 connected between it and battery 184 and various lights and communication devices in top 32. Power supply cord 190 also connects to power supply and converter 186 and extends out from apparatus 20 near base 34 to plug into 110 volt AC power. AC power is used for the water heater 166 and refrigeration unit 154 as well as supplying power to the power supply and converter 186.

[0063] Referring again to *Figures 1 and 2*, top 32 has electrical lights 192 for lighting the area around apparatus 20 and a warning light 194, such as a flashing or rotating warning beacon to attract attention. Top 32 also has a recessed compartment 196 above side 24 that holds air horn 198, which may easily be removed and used as necessary. Electronic communication equipment is also preferably located in top 32. Such equipment may include a locating device 200 such as a global positioning satellite (GPS) receiving unit and a communication unit 202, such as for radio, telephone, or computer communication.

[0064] Referring again to *Figure 3*, apparatus 20 has numerous compartments 94 that may contain an assortment of specialized goods allowing the contents of apparatus 20 to be customized meet specific needs.

[0065] For example, a disaster area survival/aid unit may contain items such as a string of 12 volt lights, blankets, tents, a stretcher, hard hats, clothes, large trash bags, a garden hose, buckets, picks, shovels, stoves, gas cans, barricade tape, name audit folders, and an emergency beacon.

[0066] A decontamination unit in may contain items such as a poly tarp, trash bags, hazardous waste bags, cable ties, duct tape, scissors, acid resistant gloves, solvent resistant gloves, glove liners, chemical boots, hazmat suits, chemical aprons, a garden hose, buckets, scrub brushes, sponges, a push broom, dust pan, safety goggles, an air pack, and folding chairs or stools.

[0067] A spill response unit may contain items such as, Absorball, acid neutralizer, spill pads/pillows/socks, acid resistant gloves, solvent resistant gloves, glove liners, chemical boots, hazmat suits, chemical aprons, SCBA 5-minute escape packs, "caution" and "do not enter" tape, scissors, yellow cones, an air pack, and folding

chairs or stools.

[0068] A respiratory protection unit may contain items such as respirators, plastic bags, buckets, drain plugs, dust masks, eye protection, gas detector, mercury spill kit, acid neutralizer, base neutralizer, absorbent cloth, plastic sheeting, SCBA five minute escape packs shovels, spill pads/pillows/socks, sanitary wipes, and traffic cones.

[0069] A medical unit may contain items such as bio hazardous waste bags, towels, various blankets, bleach, blood and fluids cleanup kit, cervical collar, CPR masks, defibrillator, duct tape, emergency first-aid kit, hydrogen peroxide, exam gloves and liners, oxygen bottle, spill pads, splint kit, stretcher, tape, triage tags, SCBA five-minute escape packs.

[0070] This ability to customize each unit for specific needs, along with the incorporation of the other structures, devices and systems described above give the apparatus 20 the ability to comply with requirements imposed by both health and safety standards for various industrial applications, as well as to provide ready access to all the equipment and supplies needed for specific tasks, in a compact mobile unit.

[0071] The descriptions above and the accompanying drawings should be interpreted in the illustrative and not the limited sense. While the invention has been disclosed in connection with the preferred embodiment or embodiments thereof, it should be understood that there may be other embodiments which fall within the scope of the invention as defined by the following claims.